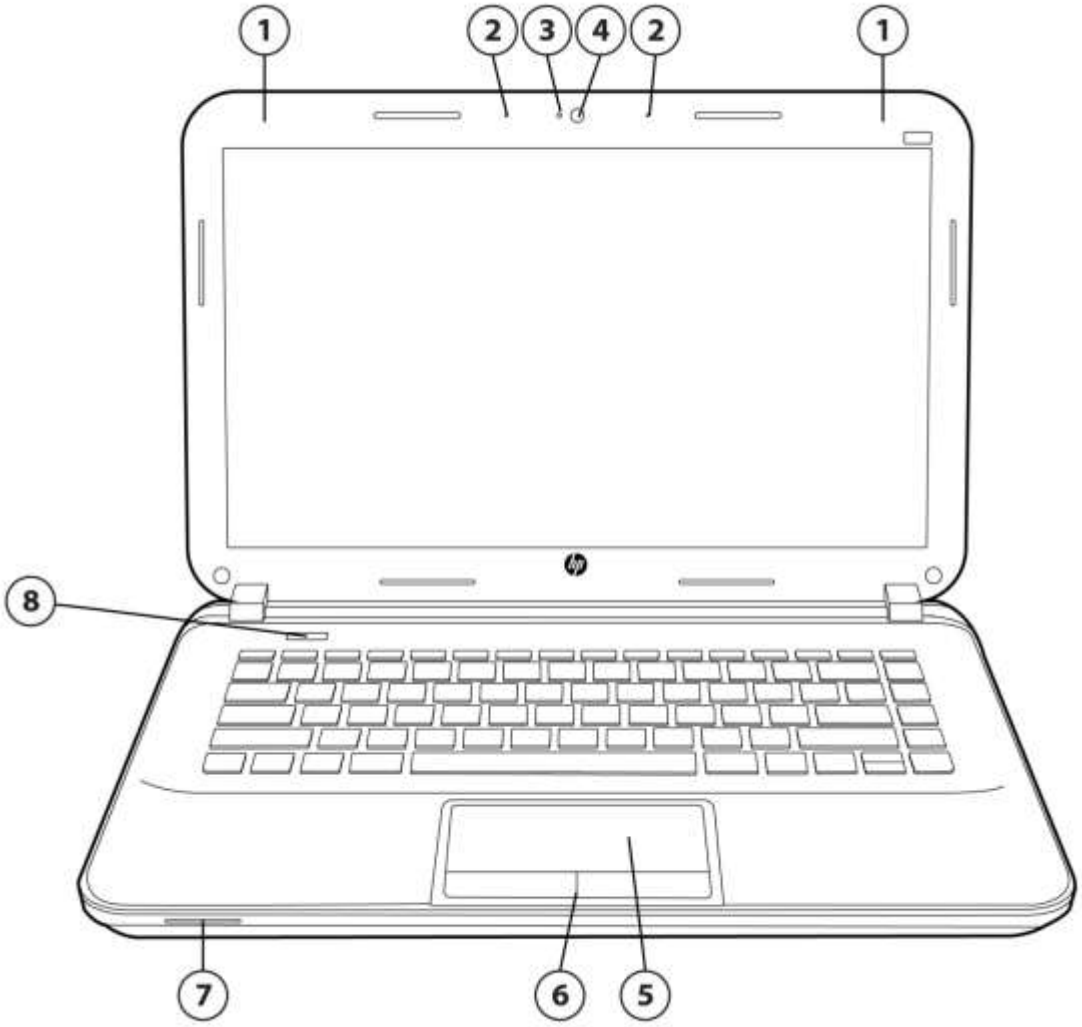
Overview

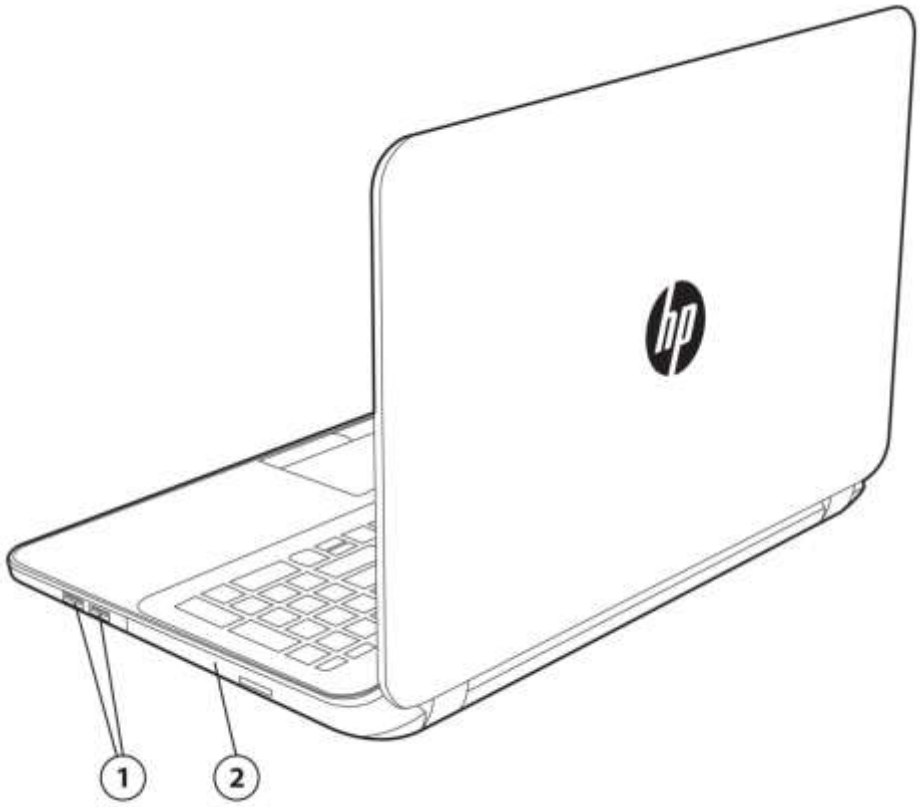
HP 245 G3 Notebook PC



Front View

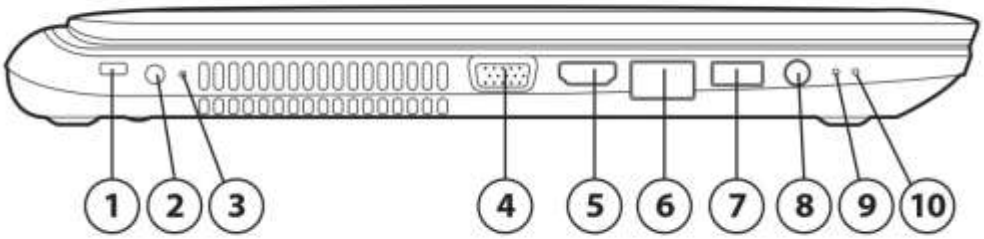
1. WLAN antennas (select models only)
2. Internal microphone
3. Webcam light
4. Webcam
5. Touchpad with scroll zone
6. TouchPad buttons
7. Speaker
8. Power button

Overview



Right/Rear View

1. USB 2.0 ports (2)
2. Optical drive door



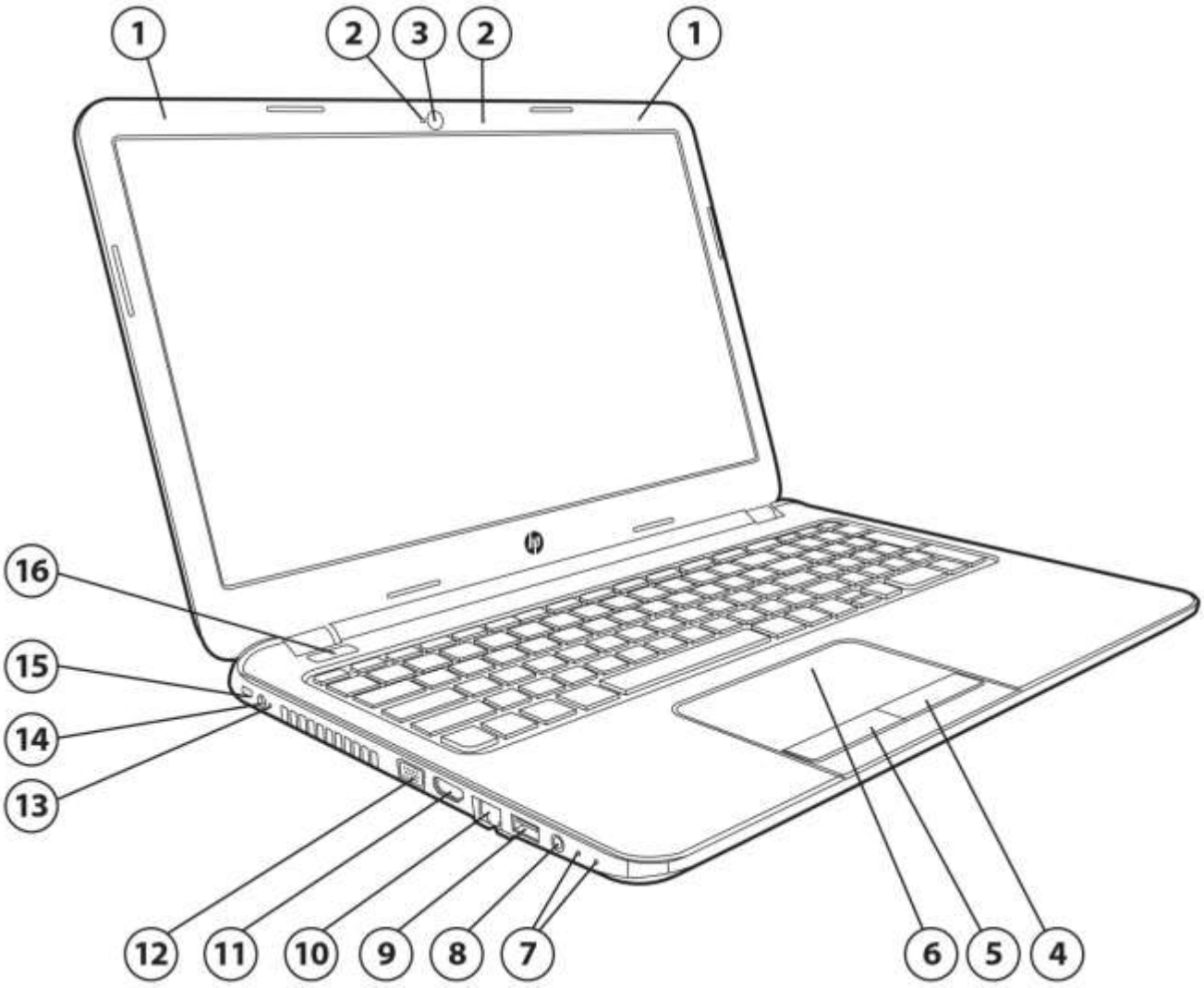
Left View

1. Security cable slot
2. Power connector
3. AC plug LED
4. VGA port
6. HDMI port
7. USB 3.0 port
8. Headphone / Microphone-in combo jack
9. Hard drive LED

Overview

5. RJ-45 (Ethernet)
10. Power LED

HP 255 G3 Notebook PC

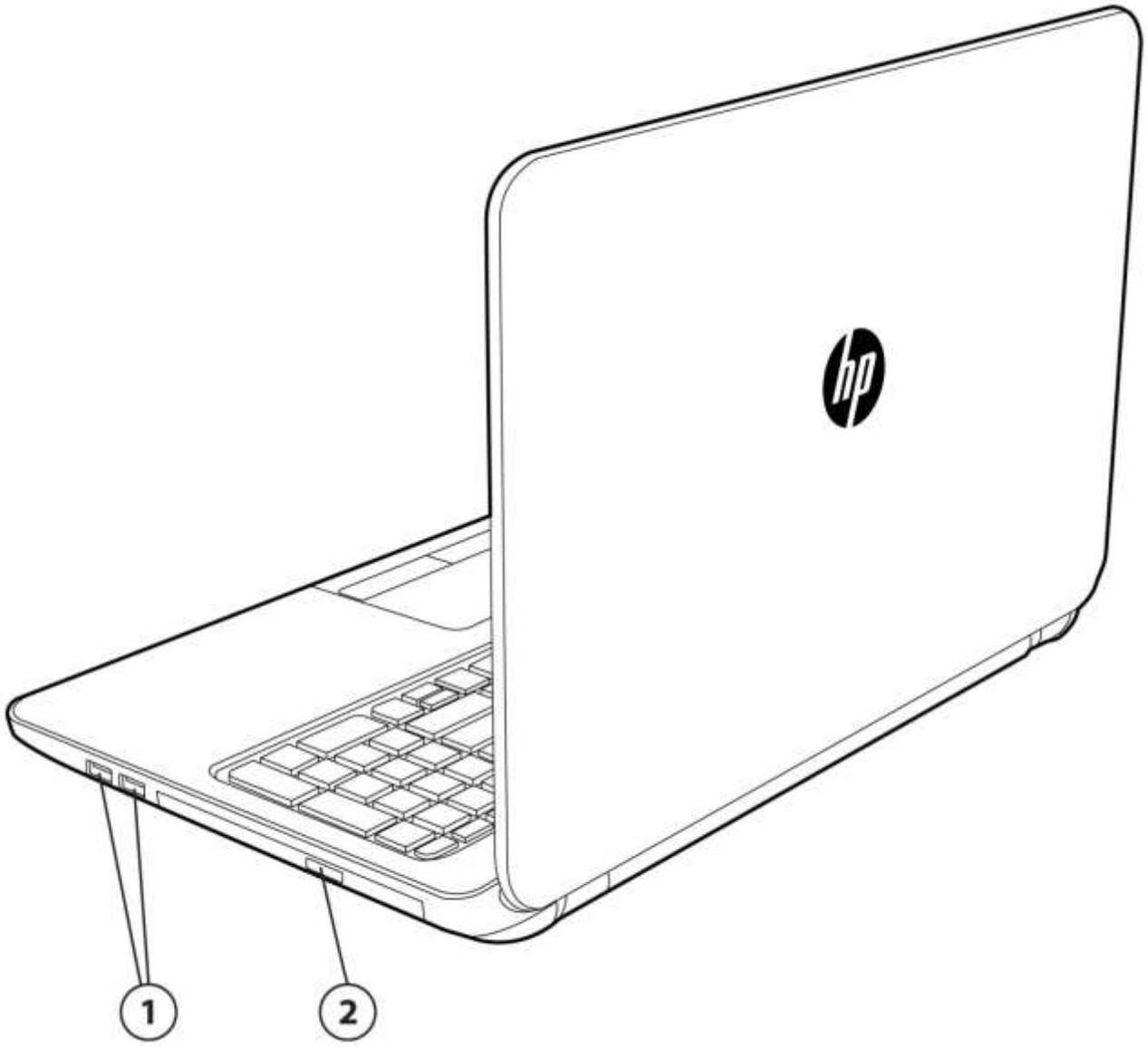


Front View

1. WLAN antennas (select models only)
2. Internal microphones
3. Webcam
4. Right TouchPad button
5. Left TouchPad button
6. Touchpad with scroll zone
7. Duplicate power LED and Hard drive LED
9. USB 3.0 port
10. RJ-45 (Ethernet)
11. HDMI port
12. VGA port
13. AC adaptor LED
14. Power connector
15. Security cable slot

Overview

8. Headphone / Microphone-in combo jack
16. Power button



Right/Rear View

1. USB 2.0 ports (2)
2. Optical drive door

Overview

Overview

AT A GLANCE

- Windows 8.1 versions, Ubuntu Linux, FreeDOS 2.0
- VISION Technology with AMD Mobility Radeon™ HD
- Durable, sophisticated design with textured-surfaced black licorice color.
- Full-sized keyboard with numeric keypad (HP 255 G3 only) and action keys enabling functions directly
- VGA port and HDMI port (for connecting to high-resolution displays)
- Integrated HD webcam, integrated microphone
- Optional 802.11 b/g/n wireless LAN module
- Optional Bluetooth™ 2.1 or Bluetooth™ 4.0
- 14.0" (HP 245 G3 Notebook PC) or 15.6" (HP 255 G3 Notebook PC) diagonal LED-backlit HD anti-glare display, models with touchscreens are available

NOTE: See important legal disclosures for all listed specs in their respective features sections.

Features

PRODUCT NAMES

HP 245 G3 Notebook PC
HP 255 G3 Notebook PC

OPERATING SYSTEM

Preinstalled

Windows 8.1 64*
Windows 8.1 Pro 64*
Windows 7 Professional (available through downgrade rights from Windows 8.1 Pro 64) **
Ubuntu Linux
FreeDOS 2.0

* Not all features are available in all editions of Windows 8.1. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8.1 functionality. See microsoft.com for details.
** This system is preinstalled with Windows® 7 Pro software and also comes with a license and media for Windows 8.1 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

ACCELERATED PROCESSING UNIT

AMD

AMD Quad core A4-6210 APU with Radeon™ HD R3 Graphics (1.8 GHz, 2MB L2 cache, 4 cores)*
AMD Quad core A8-6410 APU with Radeon™ HD R5 Graphics (2.2 GHz, 2MB L2 cache, 4 cores)*
AMD Dual core E1-6010 APU with Radeon™ HD R2 Graphics (1.35 GHz, 1MB L2 cache, 4 cores)*

* This system requires a separately purchased 64-bit operating system and 64-bit software products to take advantage of the 64-bit processing capabilities of AMD technology. Multi-core processing with AMD technology is designed to improve performance of this system. Given the wide range of SW applications available, performance will vary. AMD's numbering is not a measurement of clock speed.

CHIPSET

AMD Beema (-SoC APU, BGA)

GRAPHICS

Integrated:
AMD Radeon™ HD R5 (AMD Quad Core A8-6410 APU)
AMD Radeon™ HD R3 (AMD Quad Core A4-6410 APU)
AMD Radeon™ HD R2 (AMD Dual Core E1-6010 APU)

Features

DISPLAY

HP 245 G3 Notebook PC

Internal
14.0”diagonal LED-backlit HD* 16:9 widescreen anti-glare (1366 x 768)
14.0”diagonal LED-backlit HD* 16:9 widescreen BrightView (1366 x 768) (touch-enabled)
External
Up to 32-bit per pixel color depth
VGA
Port supports resolutions up to 2048 x 1536 external resolution @75 Hz
HDMI
1.4 port supports up to 1080p, 1920 x 1080 at 60Hz

HP 255 G3 Notebook PC

Internal
15.6”diagonal LED-backlit HD anti-glare (1366 x 768)
15.6”diagonal LED-backlit HD BrightView (1366 x 768) (touch-enabled)
External
Up to 32-bit per pixel color depth
VGA
Port supports resolutions up to 2048 x 1536 external resolution @ 75Hz
HDMI*
1.3 port supports up to 1080p, 1920 x1080 at 60Hz and 1920 x1200 @ 60Hz DVI Mode

*HDMI cable sold separately.

NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

STORAGE AND DRIVES

Primary Storage Bay
Hard Drives
320/500/750 GB/1 TB 5400 rpm SMART SATA II

NOTE: For hard drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 8.1) of system disk is reserved for the system recovery software.

OPTICAL DRIVES

Fixed Optical Drive
DVD+/-RW SuperMulti DL Drive*
Weight saver
* Double-layer discs can store more data than single layer discs. However, double-layer discs burned with this drive may not be compatible with many existing single-layer DVD drives and players. Note that DVD-RAM cannot read or write to 2.6 GB

Features

single-sided/5.2 GB double-sided – version 1.0 media. Don't copy copy-right protected materials.

MEMORY

Standard

DDR3L SDRAM (1600 MHz)*

One SODIMM slot supporting single channel* SODIMMs

Standard memory up to 8192MB

Maximum

Upgradeable to 8192 MB with optional 8192 MB* SODIMM in slot 1

* Maximum memory speed supported by the system may be 1333 MHz or 1066 MHz.

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.

*Maximum memory capacities assume Windows 64-bit operating systems or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.

NETWORKING/COMMUNICATIONS

Wireless

Optional Qualcomm 802.11b/g/n (1x1) wireless LAN module[1,2]
Optional Qualcomm 802.11 b/g/n (1x1) + Bluetooth® 4.0 Combo[1,2]
Optional Bluetooth®2.1[1,2] or Bluetooth® 4.0 [1,2]

Communications

Integrated Realtek Ethernet (10/100 NIC)

1. Sold separately or as an optional feature.
2. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited.

AUDIO/MULTIMEDIA

Audio

High Definition Audio support
Integrated Stereo Speakers
Integrated microphone

Webcam

Integrated HD* Webcam**

- Supports videoconferencing and still image capture

Features

- Improved quality for video streaming and still image capture (1280x720 resolution)
- Up to 30 frames/sec
- Fixed focus lens

* HD content required to view HD images.

** Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as editing keys, both left and right control and alt keys, and function keys. US and International key layouts are available. Includes a separate numeric keypad (HP 255 G3 only).

Pointing Devices

Touchpad with 2-piece pick button with left and right click functions

Buttons and Function Keys

Multi-touch gestures supported

SOFTWARE AND SECURITY

Preinstalled Software with Windows Operating System

Buy Office
Recovery Manager Installer
Cyberlink Youcam DE
Cyberlink Power DVD (available on select models)
McAfee™ Internet Security 2013*
Getting Started with Windows 8.1

Security

Security Lock slot (lock must be purchased separately)

* Internet access required. First 60 days included. Subscription required for live updates afterwards.

POWER

Power Supply

External 45W Smart AC adapter (UMA)
External 65W Smart AC adapter (discrete)
External 65W EM Smart AC adapter (for China and India)

Primary Battery

HP 3-cell (31 WHr) polymer battery
HP 4-cell (41 WHr) polymer battery

Battery Life

HP 245 G3 Notebook PC

Features

3-cell (31 WHr) battery	Up to TBD hours
4-cell (41 WHr) battery	Up to TBD hours
HP 255 G3 Notebook PC	
3-cell (31 WHr) battery	Up to TBD hours
4-cell (41 WHr) battery	Up to TBD hours

System Standby Time
Up to TBD weeks*

*Standby life will vary depending on various factors including battery, Memory, CPU, EC and LAN chip. The maximum capacity of the battery will naturally decrease with time and usage.

Power Conservation
Hibernation*
Standby*
ACPI compliance*

* Only Linux will feature power conservation.

WEIGHTS & DIMENSIONS

HP 245 G3 Notebook PC

Weight
Starting at < 4.15 lbs (1880 g) ((Non-Touch) (Weight will vary by configuration)
Starting at < 4.81 lbs (2180 g) (Touch) (Weight will vary by configuration)

Dimensions (w x d x h)
Non-Touch
13.58 x 9.61 x 1.0 in
345 x 244 x 25. 3 mm

Touch
13.58 x 9.61 x 1.01 in
345 x 244 x 25.6 mm

HP 255 G3 Notebook PC

Weight
Starting at < 4.83 lbs (2190 g) (Non-Touch) (Weight will vary by configuration)
Starting at < 5.49 lbs (2490 g) (Touch) (Weight will vary by configuration)

Dimensions (w x d x h)

Features

Non-Touch
14.88 x 10.2 x 1.0 in
378.0 x 259.0 x 25.3 mm

Touch
14.88 x 10.2 x 1.0 in
378.0 x 259.0 x 25.6 mm

NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 4-cell battery, hard drive, 1 GB memory, and optical drive.

PORTS/SLOTS

Ports
VGA – One
HDMI* – One
Headphone / Microphone-in combo jack – One
Power Connector – One
RJ-45 (Ethernet) - One
USB 3.0 – One
USB 2.0 – Two

Digital Media Slots
Supports SD/SDHC/SDXC
Supports mini versions with adapter

* HDMI cable sold separately.

SERVICE AND SUPPORT

HP Services offers limited 1-year warranty options depending on country;
3-year options available With HP Care Pack Services**, depending on country, 1-year limited warranty on primary battery. On-site service and warranty upgrades are also available. Optional* HP Care Pack Services** are extended service contracts which go beyond your standard warranties. For more details visit: hp.com/go/lookuptool.

*Sold separately or as an optional feature.
** Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. Consult the HP Customer Support Center for details.
http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp

NOTE: Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit hp.com/go/cpc

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	**Nominal Operating Voltage**	18.5/19.5V
	Average Operating Power	Integrated graphics: TBD W**AMD E-series platform
	Max Operating Power	< 65 W
Temperature	**Operating**	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	**Operating**	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	**Operating**	40 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	**Operating**	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	**Operating**	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
Planned Industry Standard Certifications	**UL**	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Select models*
	EPEAT®	Registered Silver in United States**
	ICES	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes
	UKRSERTCOMPUTER	Yes

* Configurations of the HP 245 G3 and HP 255 G3 Notebook PCs that are ENERGY STAR qualified are identified as HP 245 G3 ENERGY STAR and HP 255 G3 ENERGY STAR on HP websites and on energystar.gov.
** EPEAT registration varies by country. See epeat.net for registration status by country.
EPEAT status listed above applies to U.S.

For accessibility information on HP products, please visit: hp.com/accessibility.

Technical Specifications

DISPLAYS

14.0-inch LED HD anti-glare (1366 x 768)	**Active Area** (w x h)	12.16 x 6.85 in (30.9 x17.4 cm)	
	Diagonal Size	14.0 in (35.6cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (min)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	**Pitch**	0.252 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	101 ppi	
	Viewing Angle	±40° Horizontal, ±10°/-30°° Vertical (minimum) 40/40/30/10 (Left/Right/Down/Up)	

15.6" LED HD anti-glare (1366 x 768)	**Active Area** (w x h)	13.54 x 7.59 in (34.4 x 19.4 cm)	
	Diagonal Size	15.6 in (39.6cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (min)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	**Pitch**	0.252 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	101 ppi	
	Viewing Angle	±40° Horizontal, +10°/-30° Vertical (minimum) 40/40/30/10 (Left/Right/Down/Up) (minimum	

STORAGE AND DRIVES

Internal Storage			
1 TB* 5400 rpm SATA Hard Drive	**Drive Weight**	0.254 lb (115 g)	
	Capacity	1 TB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	300 MB/s (Drive Capability)
	Seek Time (typical reads, including	**Single Track**	3 ms
		Average	13 ms

Technical Specifications

	settling)	**Maximum**	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	1,953,525,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
750 GB* 5400 rpm SATA Hard Drive	**Drive Weight**	0.22 lb (101 g)	
	Capacity	750 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	1,465,149,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
500 GB* 5400 rpm SATA Hard Drive	**Drive Weight**	0.22 lb (101 g)	
	Capacity	500 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	150 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
320 GB* 5400 rpm SATA Hard Drive	**Drive Weight**	0.22 lb (101 g)	
	Capacity	320 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	

Technical Specifications

	Transfer Rate	**Synchronous** (maximum)	150 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	625,142,448	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

* For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 8.1) of system disk is reserved for the system recovery software.

Optical Drives			
DVD+/-RW SuperMulti DL Drive	**Access Times**	Random	<140ms CD (typical) < 160 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM 8X DVD 24X CD-R 24X CD-RW 8X DVD+R 8X DVD+RW 8X DVD-R 6X DVD-RW 5X DVD-RAM	
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, DVD+R DL, DVD-R DL	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	

NETWORKING/COMMUNICATIONS

Networking		
Integrated Realtek 10/100 NIC	**Ethernet Features**	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)

		100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable
	Power Management	ACPI compliant - multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
	Performance Features	TCP/IP/UDP Checksum Offload (configurable) Large send offload and Giant send offload Receiving Side Scaling
	Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
	Interface	PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ
	NIC Device Driver Name	Realtek PCIe FE Ethernet Family Controller
Communications		
Qualcomm 802.11b/g/n WiFi Adapter*, **	**Wireless LAN Standards**	IEEE 802.11b IEEE 802.11g IEEE 802.11n
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows 7, (details at: hp.com/go/notebooks/WLAN)
	Frequency Band	2.402 - 2.482 GHz
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n150Mbps for MCS7
	Frequency Support	20 MHz: 2.4 GHz bands
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
	Security[1]	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC,

Technical Specifications

	PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 5) with Microsoft Windows 7only.
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power[2]	13.5 dBm, minimum
Power Consumption	Idle associated: 250 mW avg (CLKREQ enabled) Idle unassociated: 100 mW avg Transmit/Receive channel: 2.0 /1.6 W
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	11b:-88dBm@11Mbps, 11g:-74 dBm@54Mbps, 11n:-70dBm@72.Mbps.
Antenna type	High efficiency dual antenna with spatial diversity, usually mounted in the display enclosure
Form Factor	PCI-Express Half-MiniCard
Weight	4 g
Dimensions	3.3 x 26.65 x 29.85 mm
Operating Voltage	3.3v +/- 9%
Temperature	Operating -10° to 70° C Non-operating -40° to 80° C
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
LED Activity	Amber LED on-Radio OFF; White LED on-Radio ON

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

NOTE: WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista and Windows 7.

Technical Specifications

* Wireless access point and internet service required. Availability of public wireless access points limited.

** Sold separately or as an optional add-on feature.

Qualcomm 802.11b/g/n Bluetooth 4.0 Combo Card*	**Wireless LAN Standards**	IEEE 802.11b IEEE 802.11g IEEE 802.11n
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows7 (details at: hp.com/go/notebooks/WLAN)
	Frequency Band	2.402 – 2.482 GHz
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 150Mbps for MCS7
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
	Security[1]	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. WAPI Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 5) with Microsoft Windows Vista and XP only.
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
	Network Architecture	Ad-hoc (Peer to Peer)
	Models	Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power (for CCK)[2]	13.5dBm , minimum
	Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)
	Power Management	ACPI compliant power management 802.11 compliant power saving mode
	Receiver Sensitivity[3]	11b:-88dBm@11Mbps, 11g:-74 dBm@54Mbps, 11n:-70dBm@72.Mbps.
	Antenna type	High efficiency dual antenna with spatial diversity, mounted in the display enclosure

Technical Specifications

Form Factor	PCI-Express Half-MiniCard v1.2	
Weight	6 g	
Dimensions	3.3 x 26.65 x 29.85 mm	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating	14° to 149° F (-10° to 65° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Off – Radio OFF; Solid LED On – RadioON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

NOTE: WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista and Windows 7.

Bluetooth Specification	
V4.0 High Speed, V2.1+EDR, backwards compatible with V1.1, 1.2 and 2.0	
Number of Available Channels	79 (1 MHz) available channels
Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps
	Synchronous Connection Oriented links up to 3, 64 kbps, voice channels
	Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)
Receiver Sensitivity	Better than -80 dBM at 0.1 % raw bit error rate
Power Consumption	Peak (Tx) 330 mW
	Peak (Rx) 230 mW
	Sleep <17 mW
Antenna	Internally integrated within module
Range	Up to 33 ft (10 m)
Electrical Interface	USB 2.0 compliant
	Microsoft Windows Plug and Play compliant
Bluetooth Software Supported	Broadcom Bluetooth for Windows
	Microsoft Windows Bluetooth Software
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
Security	Full support of Bluetooth Security Provisions
Power Management	Microsoft Windows ACPI, and USB Bus Support
	Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff

Technical Specifications

	Certifications	All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
	Bluetooth Profiles Supported	Generic Access Profile (GAP) Service Discovery Application Profile (SDAP) Serial Port Profile (SPP) Dial_Up Networking Profile (DUN) Generic Object Exchange Profile (GOEP) Object Push Profile (OPP) File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP) Personal Area Networking Profile (PAN) Human Interface Device Profile (HID) Generic Audio/Video Distribution Profile (GAVDP) Advanced Audio/Video Distribution Profile (A2DP) FAX Profile (FAX) Basic Imaging Profile (BIP) Headset Profile (HSP) Hands Free Profile (HFP) Basic Printing Profile (BPP) VDP (Video Distribution Profile) AVRCP (Audio Video Remote Control Profile)

* Wireless access point and internet service required. Availability of public wireless access points limited.
** Sold separately or as an optional add-on feature.

AUDIO/MULTIMEDIA

Audio Hardware	**Implementation**	Realtek ALC3201-GR High Definition audio
	Volume Controls	Up, down, and mute function keys
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes
Audio Output Quality	**Frequency Response**	10 Hz ~ 22 KHz
	Signal to Noise Ratio	Typical 95 dB FSA (DAC)
	Total Harmonic Distortion	Typical -88 dB FS (DAC)
	Noise Floor	-110 dB

Technical Specifications

	Play/Record Sampling Rate(s)	Up to 192 KHz
	DAC	24 bits
	ADC	24 bits
Integrated Stereo Speakers	**Power Rating**	1.5 W
	Impedance	4 ohms
Multimedia		
Integrated HD Webcam	Supports videoconferencing and still image capture Improved quality for video streaming and still image capture (1280x720 resolution) Up to 30 frames/sec Fixed focus lens	

POWER

HP 45W Smart AC Adapter	**Dimensions**	3.78 x 1.95 x 0.88 in (9.6 x 4.95 x 2.24 cm)	
	Input	90 to 265 VAC	
		Input Efficiency	87% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.4 A at 90 VAC and maximum load
	Output	**Output power**	45W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<8A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	**Operating temperature**	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 121° F (-20° to 85° C)
		Altitude	0 to 16,405 ft (0 to 5,000 m)
		Humidity	0% to 95%
		Storage Humidity	0% to 95%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; Reliability - failure	

Technical Specifications

		rate of less than 0.1% annually within the first three years of operation.	
HP 65W AC Adapter	**Dimensions**	4.21 x 1.85 x 1.18 in (10.7 x 4.7 x 3.0 cm)	
	Weight	0.62 lb (280 g)	
	Input	100 to 240 VAC	
		Input Efficiency	87% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC
	Output	Output power	65W
		DC output	18.5/19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	41° to 95° F (5° to 35° C)
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
		Altitude	0 to 5,000 ft (0 to 1,524 m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition.	

HP 3-cell (31 WHr) Lithium-Ion Primary battery	**Dimensions** (H x W x L)	0.8 x 1.2 x 8.1 in (2 x 3 x 20.5cm)	
	Weight (max)	0.37lb, (0.166kg)	
	Cells/Type	Lithium-Ion	
	Energy	**Voltage**	11.1V
		Amp-hour capacity	2.8Ah
		Watt-hour capacity	31Wh
	Temperature	**Operating (Charging)**	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 122° F(-10° to 50° C)
		Non-operating	-4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	**System in OFF or Standby Mode**	2.5 hours
		System ON	3 to 5 hours
	Fuel Gauge LED	No	

Technical Specifications

Warranty	1 year

COUNTRY OF ORIGIN

China

Options and Accessories (sold separately and availability may vary by country)

Type	Description	Part #
Carrying Cases	HP Business Nylon Backpack (up to 17.3")	BP849AA
	HP Business Nylon Case(up to 15.6")	BP848AA
	HP Essential Top Load Case (up to 15.6")	H2W17AA#xxx
	HP Essential Backpack (up to 15.6")	H1D24AA
	HP Essential Messenger Case (up to 17.3")	H1D25AA
Docking	HP USB 3.0 Port Replicator	H1L08AA#xxx
	HP Universal Port Replicator	E6D70AA#xxx
	HP 3001pr USB 3 Port Replicator	F3S42AA
	HP Dual Hinge Notebook Stand	AW661AA#xxx
	HP Dual Hinge II Notebook Stand	E8F99AA#xxx
Input/Output	HP Touch To Pair Mouse	H6E52AA
	HP Stylish Wireless KB/Mouse	H4B79AA
	HP USB Optical Travel mouse	RH304AA
	HDMI to VGA Adapter	H4F02AA
	HP HDMI to DVI Adapter	F5A28AA
Memory	HP 2GB DDR3 1600 PC3-12800 SODIMM	H2P63AA#xxx
	HP 4GB DDR3 1600 PC3-12800 SODIMM	H2P64AA#xxx
	HP 2GB DDR3L-1600 1.35V SODIMM	H6Y73AA#XXX
	HP 4GB DDR3L-1600 1.35V SODIMM	H6Y75AA#XXX
	HP 8GB DDR3L-1600 1.35V SODIMM	H6Y77AA#XXX
Adapters	HP 45W Smart AC Adapter (4.5mm) (PL MP only)	H6Y88AA#xxx
	HP 65W Smart AC Adapter (4.5mm)	H6Y89AA#xxx
	HP 65W Slim AC Adapter	H6Y82AA#xxx
	HP 90W Slim AC Adapter	H6Y83AA#xxx
	HP 90W Slim Combo Adapter w/ USB	H6Y84AA#xxx
Battery Chargers	HP Notebook Battery Charger (Single Battery Charger)	QL816AA#xxx
Security	HP Notebook Combo Lock	AY475AA#XXX
	HP Keyed Cable Lock	BV411AA
	HP UltraSlim Keyed Cable Lock	H4D73AA
	HP USB Smart Card Reader	F6V67AA
Storage	HP External USB Optical Drive	F2B56AA
Monitors	HP EliteDisplay E271i 27-inch IPS LED Monitor	D7Z72AA/A8/AS/AT
	HP EliteDisplay E231 23-inch LED Monitor	C9V75AA/A8/AS/AT
	HP EliteDisplay E201 20-inch LED Monitor	C9V73AA/A8/AS/AT

Options and Accessories (sold separately and availability may vary by country)

HP ProDisplay P221 21.5" LED Monitor	C9E49AA/A8/AS/AT
HP ProDisplay P201 20" LED Monitor	C9F26AA/A8/AS/AT

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